

REMARKS

Claims 1, 2, 6-11, 14, 19-23, 29-41, 48 and 49 have been canceled without prejudice or disclaimer. Claims 52-80 have been added and therefore are pending in the present application. Claims 52-80 are supported by claims 1-51.

Figure 1 has been amended to correct an obvious error. Specifically, in the originally-filed figure, the number 40 was placed above amino acid residue 39. Applicants submit that no new matter is added.

It is respectfully submitted that the present amendment presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the above amendments and the following remarks is requested.

I. The Restriction Requirement

The Office Action made a restriction requirement between Group I (claims 1, 2, 6-11, 14, 19-22 and 49) and Group II (claims 23, 29-41 and 48). As provided therein, Applicants provisionally elected with traverse the invention of Group I. Applicants confirm this election. Applicants reserve the right to file continuing applications directed to non-elected subject matter.

II. The Rejection of Claims 1, 2, 6 and 7 under 35 U.S.C. 101

Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. 101 because the claimed invention is not directed to statutory subject matter. These claims have been canceled. Furthermore, the newly presented claims are drawn to statutory subject matter. Applicants therefore submit that this rejection has been overcome.

III. The Rejection of Claims 1, 2, 8-11, 14, 19-22 and 49 under 35 U.S.C. 112

Claims 1, 2, 8-11, 14, 19-22 and 49 are rejected under 35 U.S.C. 112 as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the invention. This rejection is respectfully traversed.

It is well settled that "[t]he test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter ..." *In re Kaslow*, 217 U.S.P.Q. 1089, 1096 (Fed. Cir. 1983).

As set forth in Federal Circuit decisions, a specification complies with the written description requirement if it provides "a precise definition, such as by structure, formula, chemical name, or physical properties of the claimed subject matter sufficient to distinguish it from other materials." See, e.g., *University of California v. Eli Lilly and Co.*, 43 U.S.P.Q.2d 1398, 1404 (Fed. Cir. 1997); *Enzo Biochem v. Gen-Probe Inc.*, 63 U.S.P.Q.2d 1609, 1613 (Fed. Cir. 2002).

It is well established in the art that the definition of a genus of polypeptides having an enzyme activity of interest is accomplished by using structural features that show the relatedness of the polypeptides. For decades, the scientific community has employed three structural features to define the relatedness of genes and their products. The three structural features are (1) percent identity of the amino acid sequences of the polypeptides, (2) percent homology of the nucleic acid sequences of the genes encoding the polypeptides, and (3) nucleic acid hybridizations under defined stringent conditions to identify complementary strands of genes encoding the same or similar enzyme or protein function. These structural features have been used to predict the function of polypeptides, and to place them in an existing genus.

The scientific literature abounds with disclosures of these three structural features to describe the relatedness of proteins and their genes as well as to distinguish a protein and its gene from other proteins and their genes. Moreover, annotated databases of families of structurally-related proteins with a specific biological activity have been constructed based on these structural features. For example, the CAZy database describes the families of structurally-related catalytic and carbohydrate-binding modules (or functional domains) of enzymes that degrade, modify, or create glycosidic bonds. See www.afmb.cnrs-mrs.fr/CAZY/.

Moreover, it is well established in the art that there is a definitive relationship between protein function and % identity or homology at either the nucleotide or amino acid level. Percent identity is highly predictive of protein function and without this tool it would be impossible to make meaningful annotations of genomes in sequencing projects. Proteins that share 90% amino acid identity are known to possess the same catalytic/biochemical function which has formed the basis for genome annotation and comparative genomics.

The present invention is drawn to subtilases having an amino acid sequence which has at least 97% identity with the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2 and to modified subtilases comprising a mutation in the sequence of amino acids 1 to 269 of SEQ ID NO: 2. Since the claimed structural features provide a correlation between function and structure, the written description requirement is satisfied.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 112. Applicants respectfully request reconsideration and withdrawal of the rejection.

IV. The Rejection of Claims 1, 8-11, 14, 19-22 and 49 under 35 U.S.C. 112

Claims 1, 8-11, 14, 19-22 and 49 are rejected under 35 U.S.C. 112 because the specification is not enabling for the design and preparation of a protease having an amino acid sequence diverging from the sequence set forth in SEQ ID NO: 2 by amino acid substitutions, deletions and insertions, or combinations thereof at as many as 90% of the amino acid positions therein. This rejection is respectfully traversed.

It is well settled that "[t]he first paragraph of section 112 requires nothing more than objective enablement. How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance." *In re Marzocchi*, 169 USPQ 367, 369 (CCPA 1971). Moreover, "a specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of section 112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support." *In re Marzocchi*, 169 USPQ at 369.

"The determination of what constitutes undue experimentation in a given case requires the application of a standard of reasonableness, having due regard for the nature of the invention and the state of the art ... The test is not quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed ..." *Ex parte Jackson*, 217 U.S.P.Q. 804 (Bd. Pat. App. 1982).

It is also well settled that an assertion by the Patent Office that the enabling disclosure is not commensurate in scope with the protection sought must be supported by evidence or reasoning substantiating the doubts so expressed. *In re Dinh-Nguyen*, 181 U.S.P.Q. 46 (C.C.P.A. 1974). See also *U.S. v. Telectronics*, 8 U.S.P.Q.2d 1217 (Fed. Cir. 1988); *In re Bowen*, 181 U.S.P.Q. 48 (C.C.P.A. 1974); *Ex parte Hitzeman*, 9 U.S.P.Q.2d 1821 (BPAI 1988).

Moreover, in the absence of any evidence or apparent reason why compounds do not possess the disclosed utility, the allegation of utility in the specification must be accepted as correct. *In re Kamal*, 158 U.S.P.Q. 320 (C.C.P.A. 1968). See also *In re Stark*, 172 U.S.P.Q.

402, 406 n. 4 (C.C.P.A. 1972) (the burden is upon the Patent Office to set forth reasonable grounds in support of its contention that a claim reads on inoperable subject matter).

The present invention is drawn to subtilases having an amino acid sequence which has at least 97% identity with the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2 and to modified subtilases comprising a mutation in the sequence of amino acids 1 to 269 of SEQ ID NO: 2.

The specification contains an extensive disclosure of techniques which are well known in the art and indeed routine for persons of ordinary skill in the art for identifying other subtilases of the present invention. For example, Applicants describe hybridization techniques to identify and isolate nucleic acid sequences encoding a subtilase of the present invention. In addition, the specification discloses mutagenesis methods which are well known in the art to produce subtilases of the present invention. Moreover, the level of skill in the art is extremely high. It is well within the skill of the art to isolate and identify the claimed subtilases using the Applicants' disclosure.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 112. Applicants respectfully request reconsideration and withdrawal of the rejection.

V. The Rejection of Claims 1, 8-11, 14 and 19-22 under 35 U.S.C. 112

Claims 1, 8-11, 14 and 19-22 are rejected under 35 U.S.C. 112 as being indefinite. Claims 1-51 have been rewritten as claims 52-80 to address this rejection. Applicants therefore submit that this rejection has been overcome.

VI. The Rejection of Claims 1, 8-11, 14, 19-21 and 49 under 35 U.S.C. 102

Claims 1, 8-10, 14, 19, 21 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Christianson et al. (U.S. Patent No. 5,500,364). Claims 1, 8-11, 14, 19-21 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Hansen et al. (WO 99/27082). These rejections are respectfully traversed.

The Office Action states that Christiansen et al. and Hansen et al. disclose a variant of a *Bacillus lentus* subtilase which has an amino acid sequence which has 87% identity with the amino acid sequence of SEQ ID NO: 2

However, neither Christiansen et al. nor Hansen et al. disclose subtilases having an amino acid sequence which has at least 97% identity with the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2; subtilases comprising the amino acid sequence of amino acids

1 to 269 of SEQ ID NO: 2; or modified subtilases comprising a mutation of the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2, wherein the mutation comprises a substitution, deletion, and/or insertion at one of the positions 27, 36, 56, 76, 87, 96, 97, 98, 99, 100, 101, 103, 104, 120, 123, 129, 131, 132, 133, 143, 159, 167, 170, 192, 194, 206, 217, 218, 222, 224, 232, 235, 236, 245, 248, 252 and 274, as claimed herein.

For the foregoing reasons, Applicants submit that the claims overcome these rejections under 35 U.S.C. 102. Applicants respectfully request reconsideration and withdrawal of the rejections.

VII. The Rejection of Claim 22 under 35 U.S.C. 103

Claim 22 is rejected under 35 U.S.C. 103 as being unpatentable over Hansen et al. in view of Maurer et al. (U.S. Patent No. 5,855,625). This rejection is respectfully traversed.

The Office Action states that Maurer et al. disclose modified subtilases are effective in removing egg stains.

However, Maurer et al. also do not teach or suggest subtilases having an amino acid sequence which has at least 97% identity with the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2; subtilases comprising the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2; or modified subtilases comprising a mutation of the amino acid sequence of amino acids 1 to 269 of SEQ ID NO: 2, wherein the mutation comprises a substitution, deletion, and/or insertion at one of the positions 27, 36, 56, 76, 87, 96, 97, 98, 99, 100, 101, 103, 104, 120, 123, 129, 131, 132, 133, 143, 159, 167, 170, 192, 194, 206, 217, 218, 222, 224, 232, 235, 236, 245, 248, 252 and 274, as claimed herein.

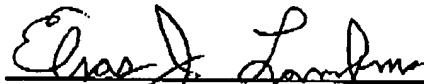
For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection.

VIII. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning this amendment or application.

Respectfully submitted,

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